Rotorcraft Directorate Focus on Safety

Federal Aviation Administration

Arlington, TX

Presented to: 2006 Designee Conference

By: FAA/Rotorcraft Directorate

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Continued Operation Safety (COS)

- System Safety Management
- Safety Management Plan
- Risk Assessment Process

COS Program

- **Purpose: Review Service Difficulties for Precursor Indicators and Develop Intervention Strategy**
- **The Plan**
  - Identify Sources of Safety Data
  - Investigate and Document (SSD)
  - Assess Risk Level
  - Determine Action based on Risk (Exposure and Hazard Level)

Safety Management Plan

- **Goal – Enhance (Rotorcraft) safety by applying structured risk management and oversight methodologies throughout the product lifecycle.**
- **We need to reduce the rate of rotorcraft accidents and incidents.**
- **The size, age, and diverse missions of the rotorcraft fleet necessitates the need to do business differently.**

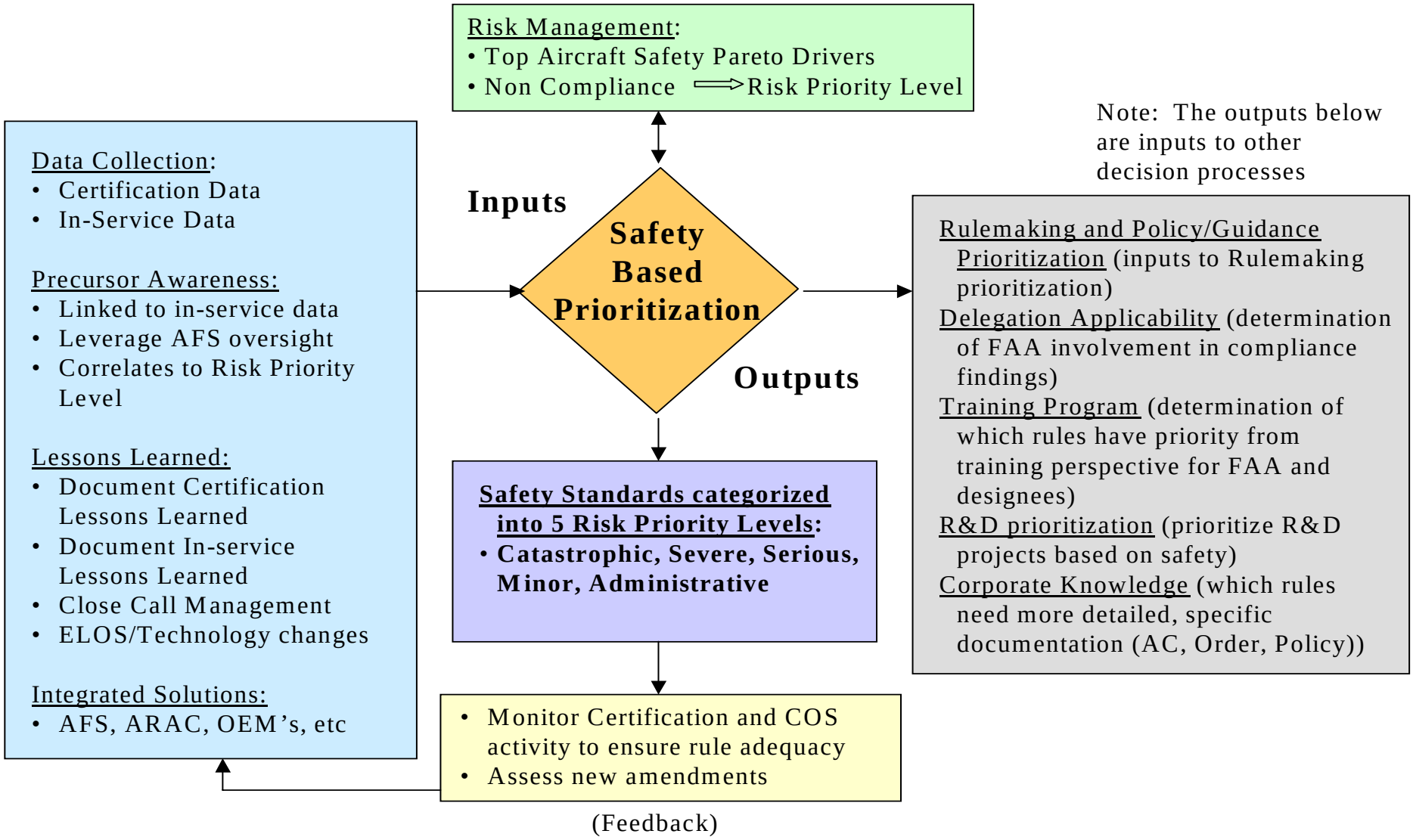
The Nuts and Bolts

- Aviation Safety Accident Prevention (ASAP)
- Service Difficulty Reports (SDR)
- Risk Assessments

Risk Assessments

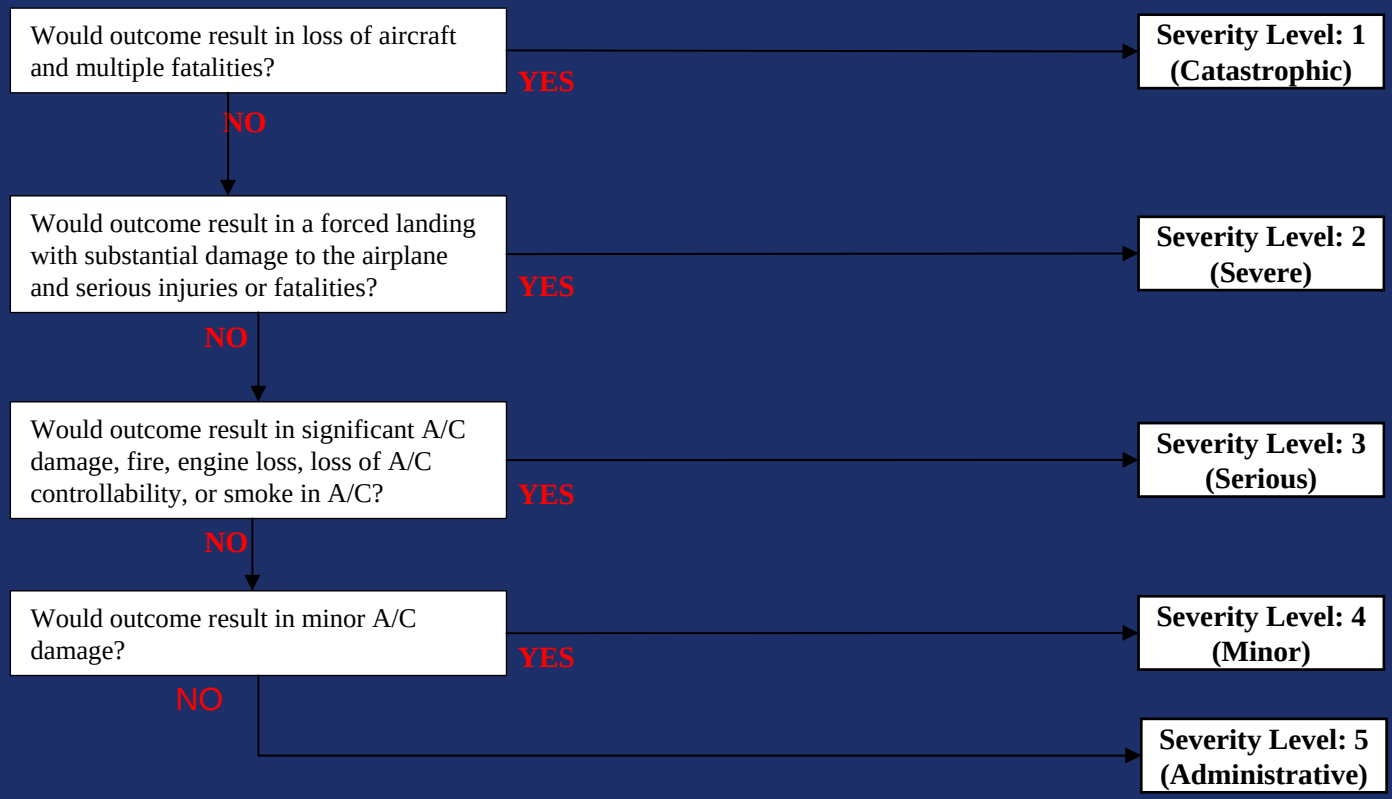
- Risk Assessments are be conducted at every level of the certification and continued operation documentation.
- The potential effects on individual and organizational delegations is the point of this discussion.
- Prioritization of certification requirements have been completed using following process.

Safety Standard Prioritization

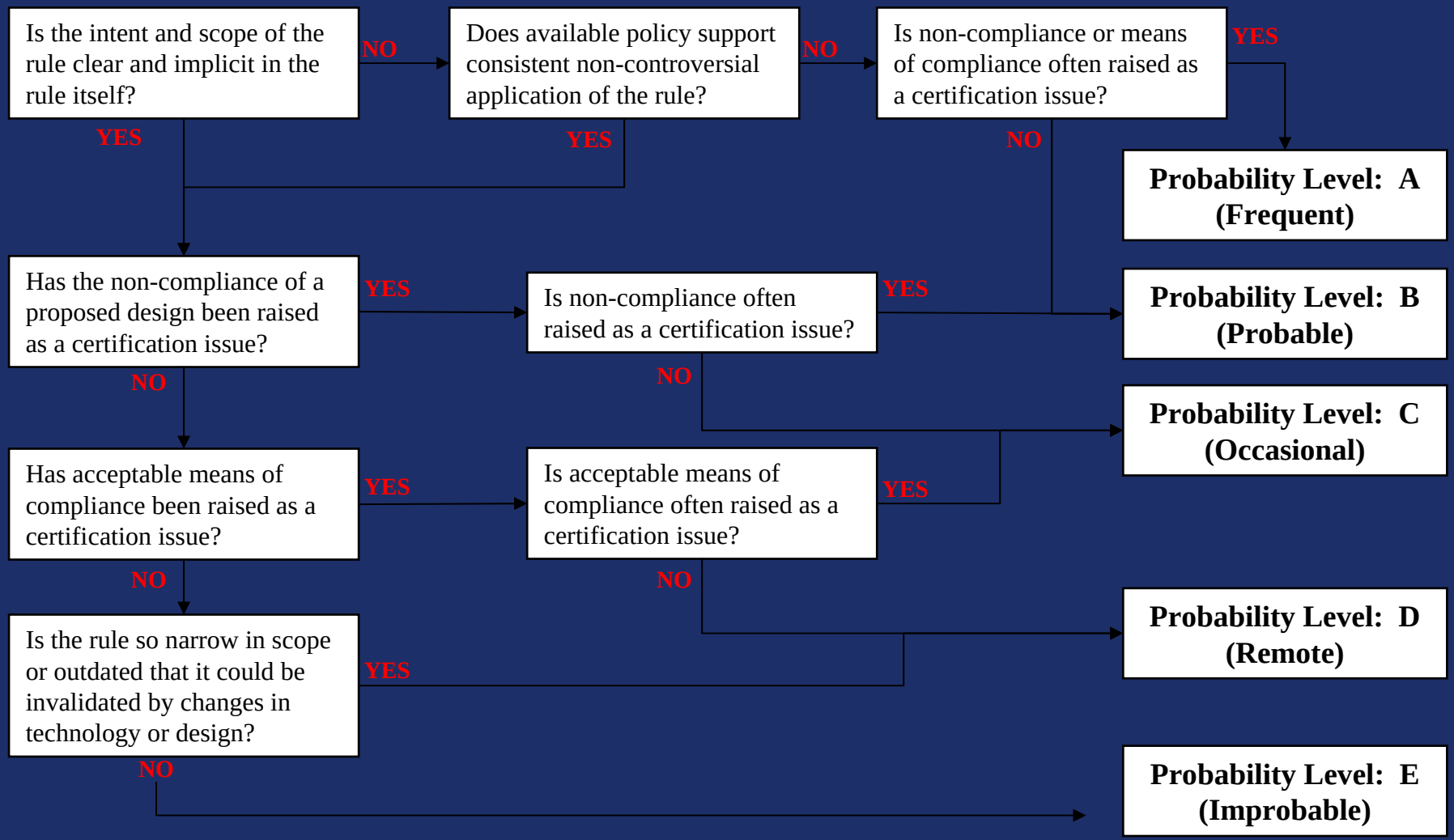


"Potential Severity of Noncompliance"

OUTCOME SEVERITY



"Probability of Non-compliance"



Generic Risk Model

RISK ASSESSMENT MATRIX						
		Severity of Non-Compliance				
Likelihood of Non-Compliance		Catastrophic	Severe	Serious	Minor	Administrative
Frequent	A	1	2	3	4	5
Probable	B					
Occasional	C					
Remote	D					
Improbable	E					

High

Serious

Medium

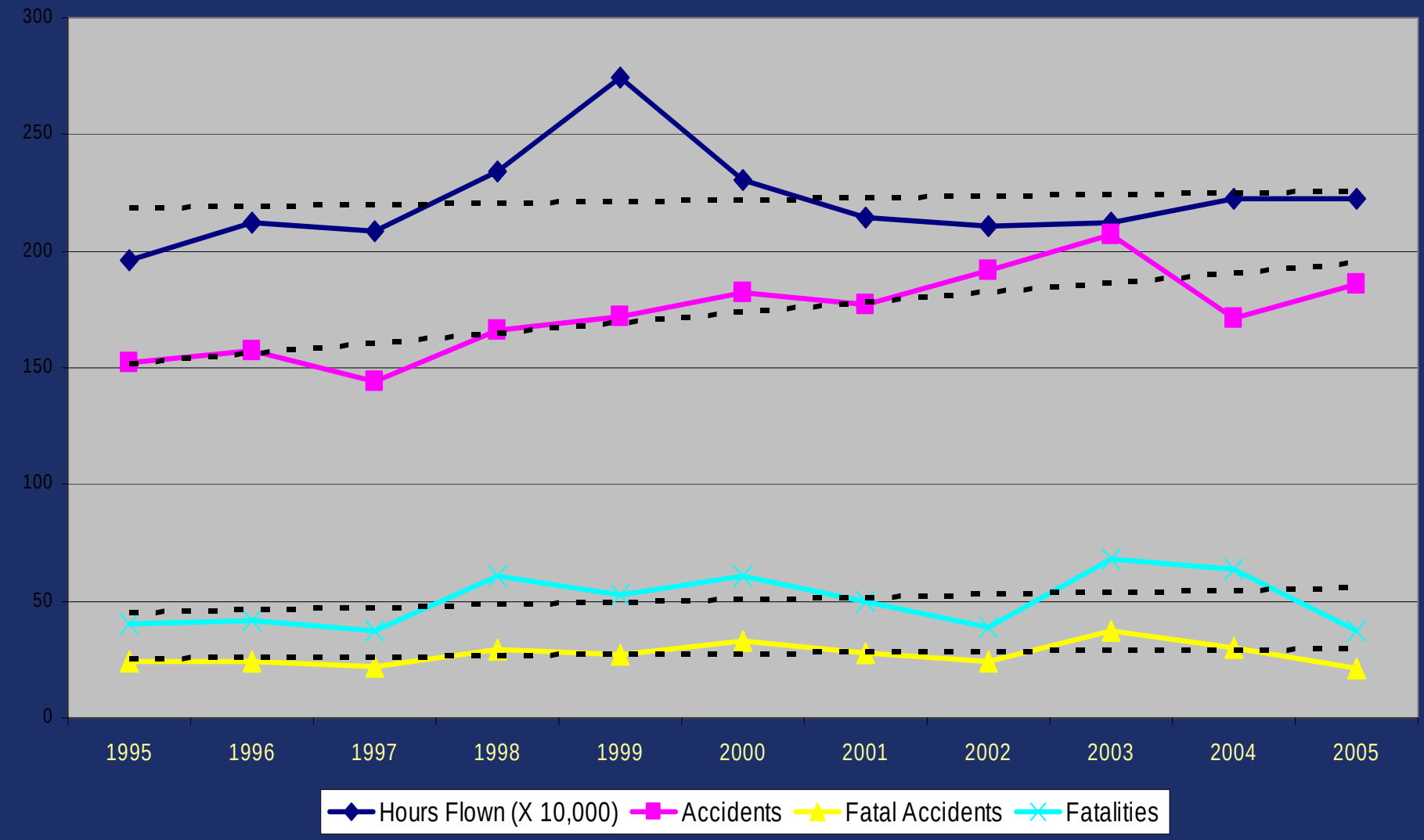
Low

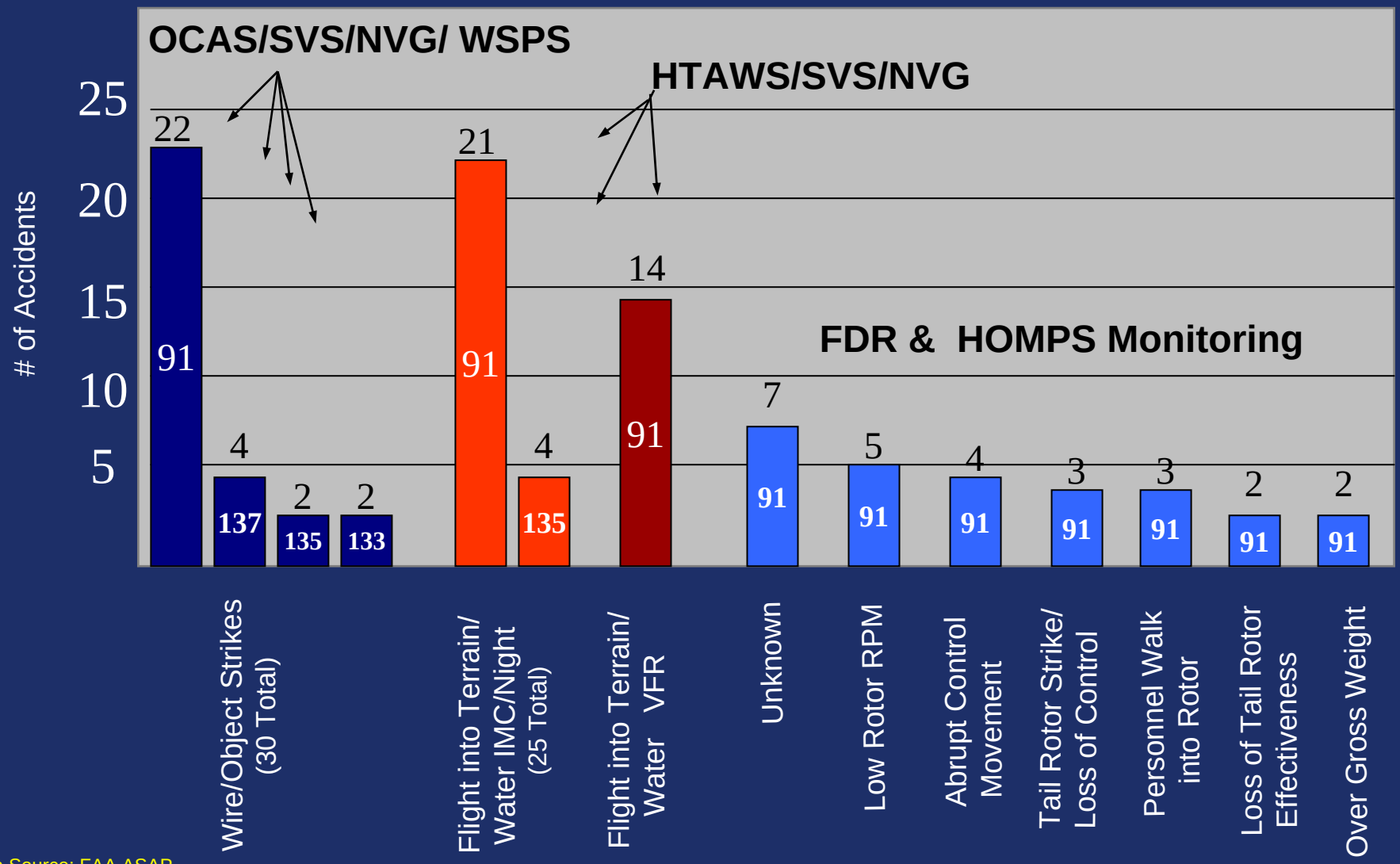
Conclusion

- **Based on accident and continued operation service difficulties, the FAA resources will be focused on areas that have a greater impact on the reduction of accidents and incidents.**
- **Designees will cover much of the work previously accomplished by FAA personnel.**

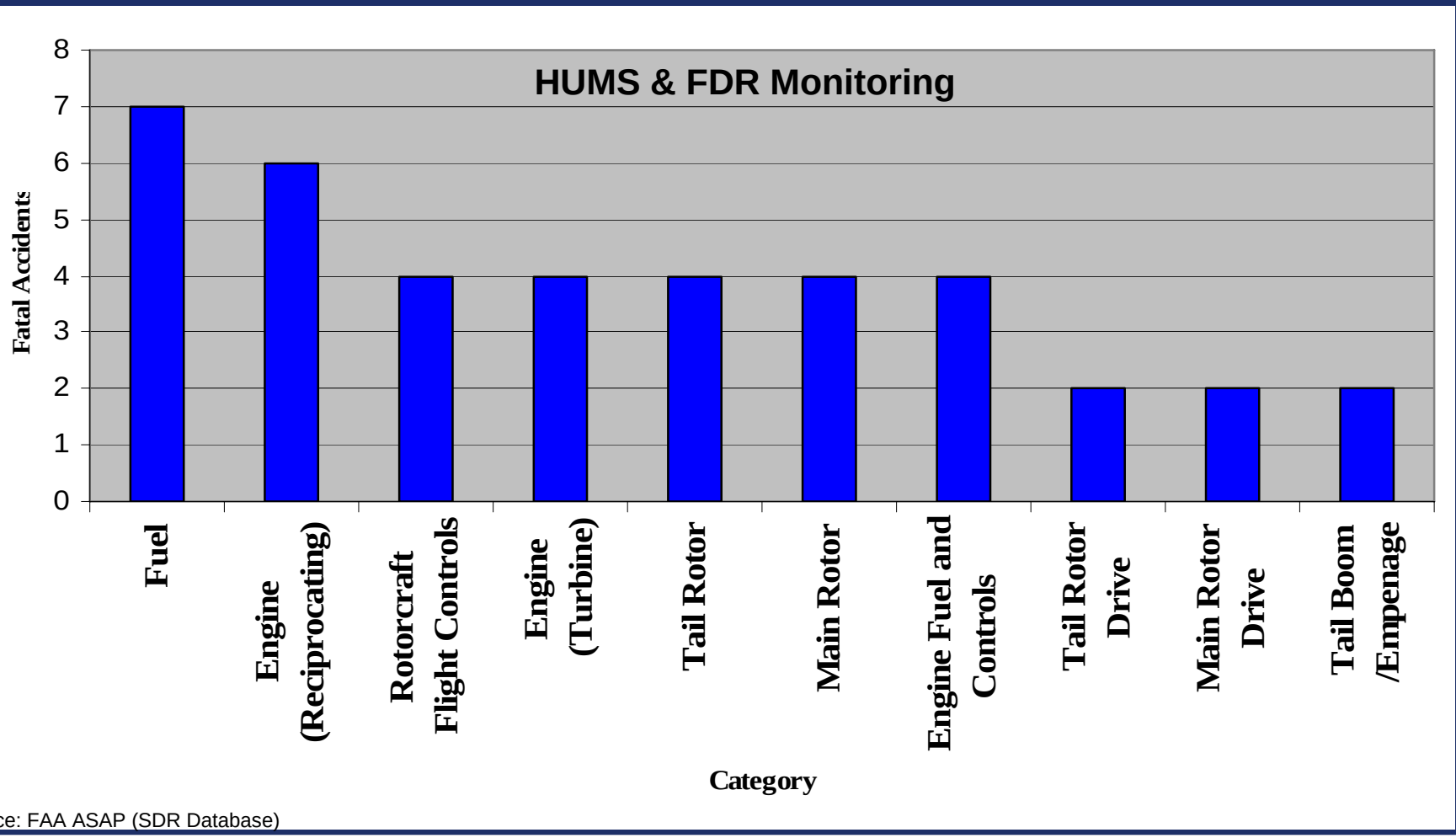
- Questions

US Civil Type Certificated Rotorcraft Accident Trends 1995- 2005





Data Source: FAA ASAP



Data Source: FAA ASAP (SDR Database)

NVG Activity

- Revision Advisory Material
- Standardization with EASA
- TSO-C164
- Instructions for Continued Airworthiness

FAA NVIS Certification Contacts:

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- **Anne Gdfrey**
  Test Pilot, ASW170 ACO
- **Jim Arnold**
  Flight Test Pilot, Rotorcraft Standards Staff
- **Jeff Trang,**
  Flight Test Pilot, Rotorcraft Standards Staff

Overview

- Certification of NVIS Lighting
- Where to Find Assistance

AC 27-1/AC 29-2 MG-16: NVIS

- **NVIS AC Revised**
- **Distributed for FAA Comment**
- **Highlights**
  - Concentration on Aircraft Level Lighting
  - Updated to Include External Lighting
  - Section on Helmets and NVG Mounts

NVG Approval TSO C-164

- **Stipulates NVGs Must Meet RTCA/DO-275 Requirements**

Certification of NVIS Lighting

- **STC Application**
- **Compliance with 14 CFR Part 27/29 Lighting**
- **Additional Evaluation for NVG Compatibility**
  - Day/Night Ground Evaluation
  - Day Reconn Flight
  - Night Flight

Lessons Learned

- **FAA Finding Compliance to 14 CFR**

  <u>NOT Mil-Specs</u>

- **NVIS Lighting Will Provide as Good or Better Functionality of Standard Lighting System**
  - NVIS Green May Wash out Gauge Markings
- **External Lighting:**
  - Technology Allowing for Affordable Reliable Lights
- **Overlays Blocking Light or Visibility**

Lessons Learned

- **Reflections Picked up by NVG**
  - Filtered Equipment
  - External Lighting
  - Interior Reflections
- **Standard Color for Red/Yellow**
  - Use of NVIS Red for CAWS
  - Standard Red for Other Warnings
  - Daylight Readability

Assistance Contacts

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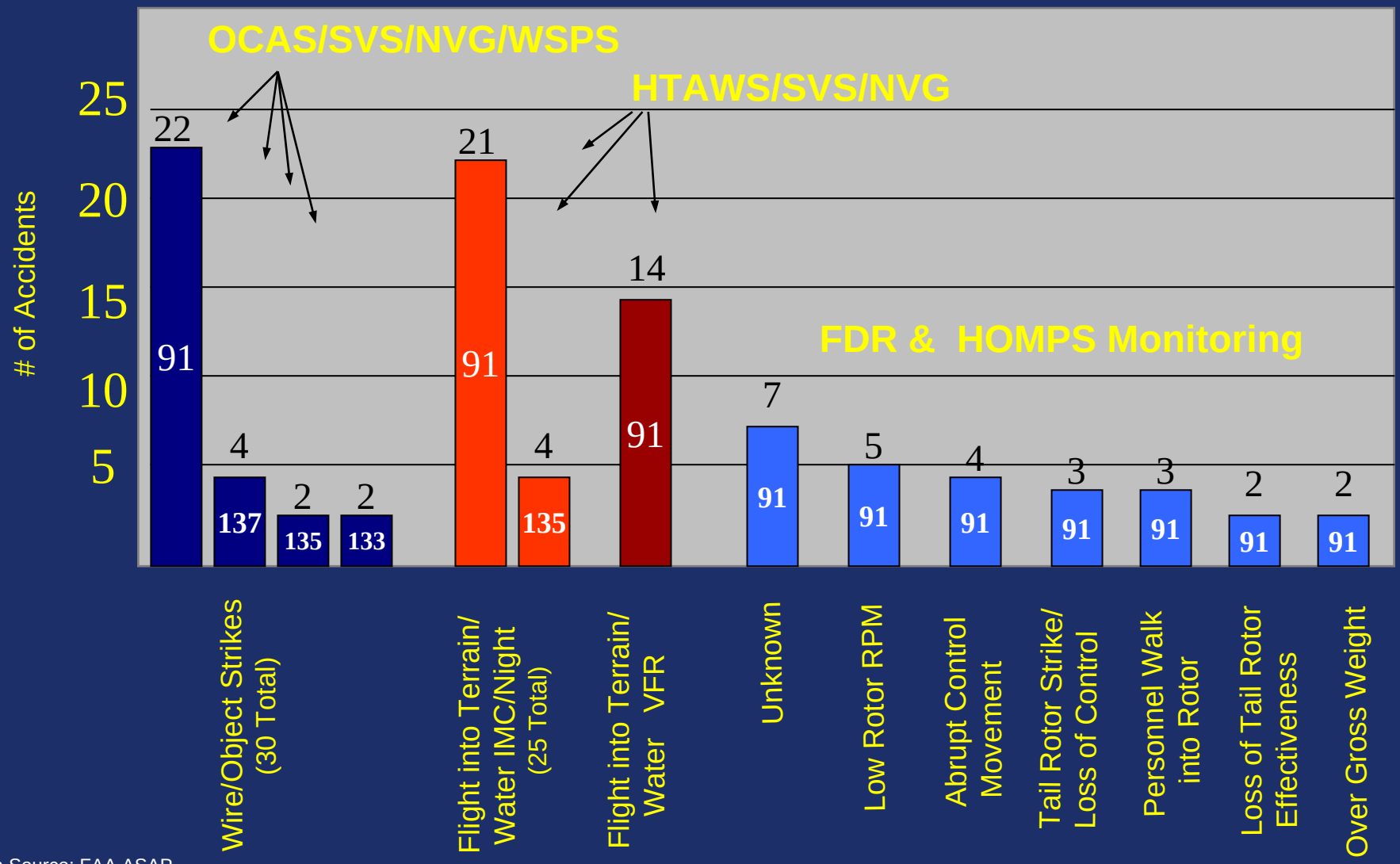
Assistance

- **NVIS Evaluation Checklists**
  - http://www.faa.gov/aircraft/ air_cert/design_approvals/ rotorcraft/nvis/

HTAWS

- Revised Advisory Information
- Revision to TSO-C151
- Synthetic Vision Systems

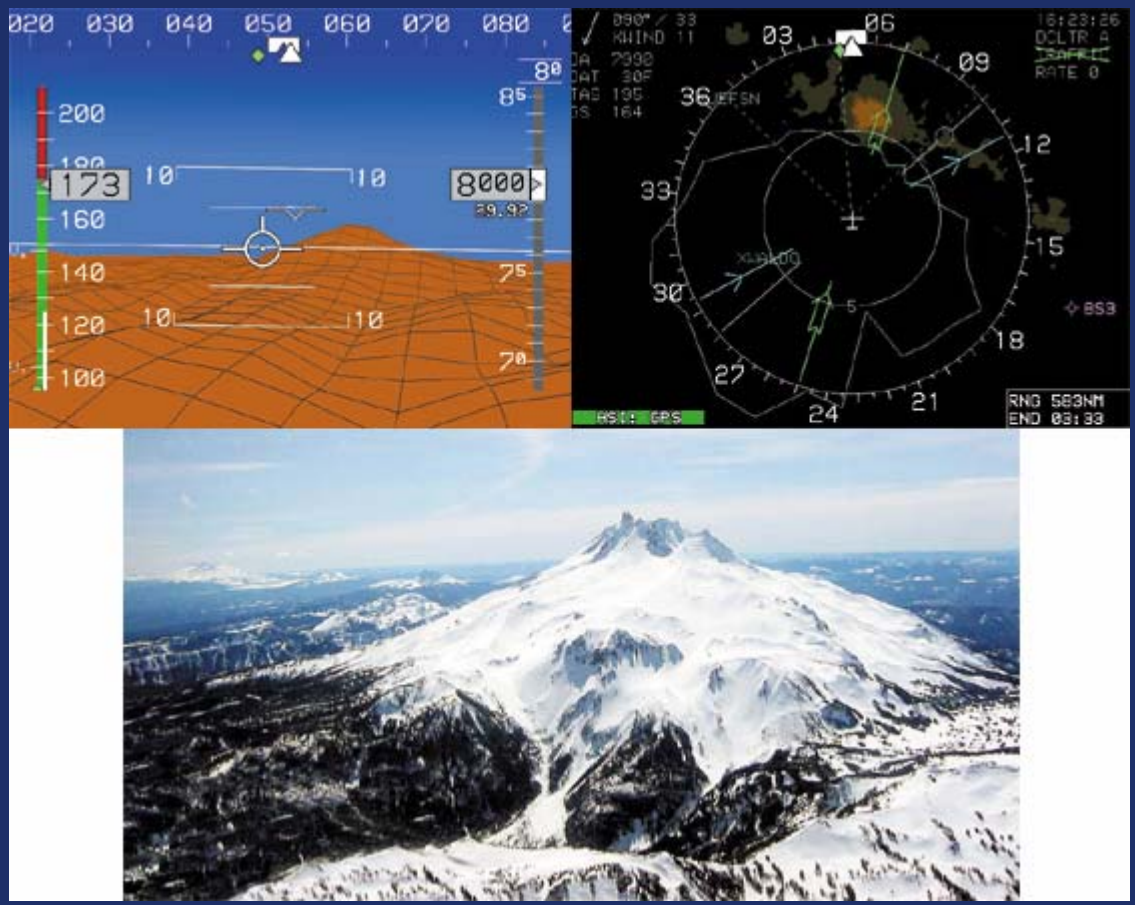


Data Source: FAA ASAP

CERTIFICATION GUIDANCE

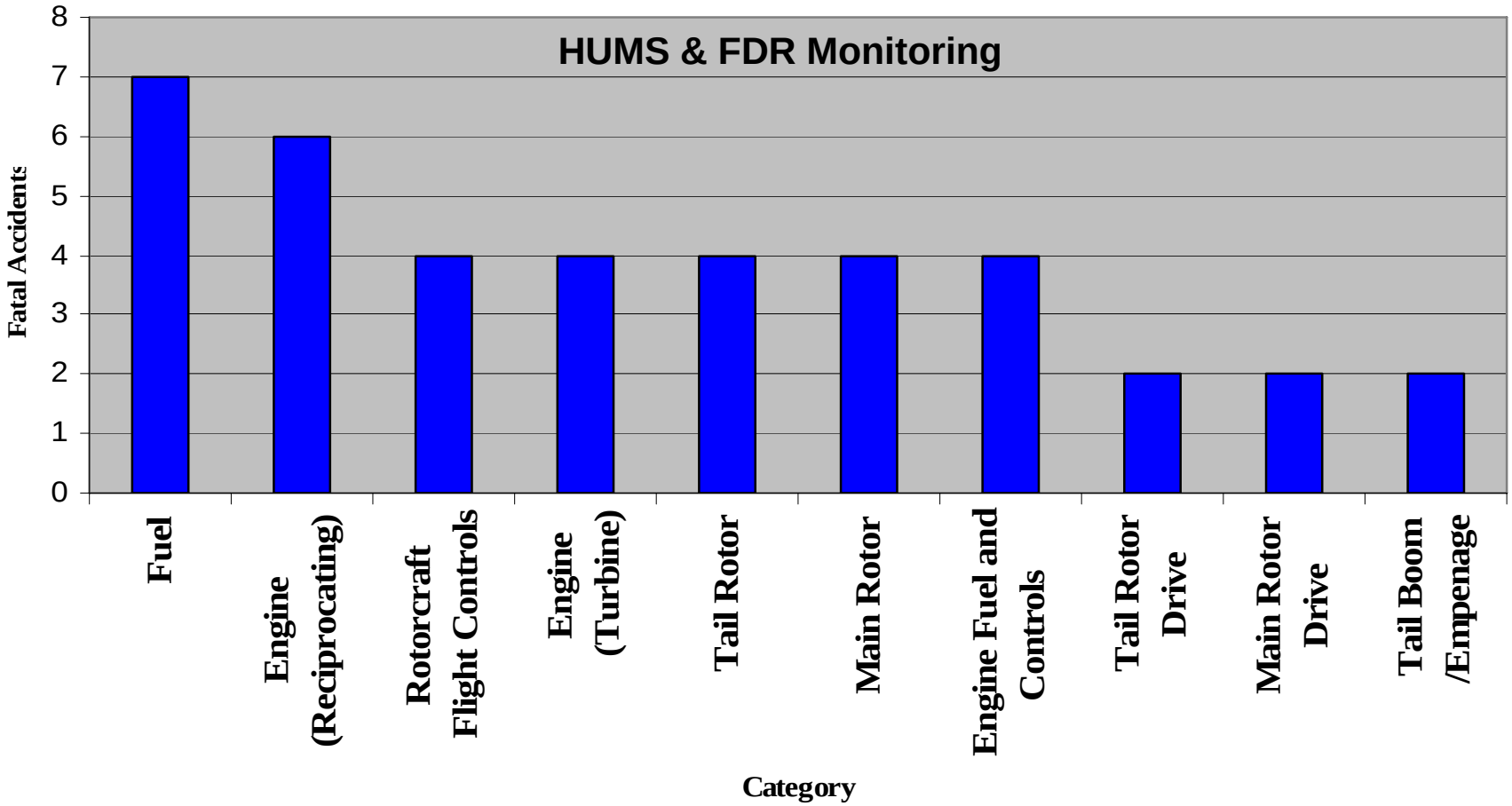
- **Advisory Circular AC 27-1B**
  - AC 27 MG 18 Helicopter Terrain Awareness and Warning System (HTAWS) Upcoming Change 2 update
- **Advisory Circular AC 29-2C**
  - AC 29 MG 18 Helicopter Terrain Awareness and Warning System (HTAWS) Upcoming Change 2 update
- **TSO – 151b Terrain Awareness and Warning System**
    - Considerations to TSO requirements for Helicopter Installations contained in AC 29 MG 18 guidance

SYNTHETIC VISION SYSTEM



HUMS

- Systems monitored
- Regulations and Advisory



Data Source: FAA ASAP (SDR Database)

FAA REGULATIONS

- HUMS is not a required system per the regulations.
- FAA HUMS Advisory Circular (AC) provides guidance for HUMS installations via STC, TC.
- AC requires HUMS application for which “CREDIT” is sought to be validated.
- “CREDIT” is a HUMS application that adds to, replaces, or intervenes in industry accepted maintenance practice or flight operations

FAA ADVISORY CIRCULAR (AC)

- AC 29-2C & 27-1B, Change 1, Section MG 15: Provides a method of showing compliance to regulations for HUMS installations.
- AC Developed By Rotorcraft Health Usage Monitoring System Advisory Group (RHUMSAG)
- Committee Members: FAA Certification & Flight Standards, European Joint Airworthiness Authorities (JAA), US & European Industry Groups (AIA & AECMA)